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Sunday, July 31, 2016

Artifacts of wealth: patterns in the evolution of collectibles and money

Introduction

This is the first of at least two posts on the evolution of collectibles and money. The goal is to explore the evolutionary and economic functions of the "ornamental" or "ceremonial" objects that are so common in the archaeological record. In this article, we will look broadly and visually at the patterns of evolution of artifacts, in terms of their material and visual characteristics, of the most common kinds of collectibles -- those objects that look to our modern eyes like jewelry.

'Tomb Nr 7 from Yao Shan showing Jade implements and their position on or near the body. This display in the Museum gives a good overview of the multiple Jade pieces and shapes following the deceased Liangzhu Noble into to afterworld.' (Neolithic China, 3000 BC to 2000 BCE)

This blog post will lay out a profound puzzle: the ubiquity and importance of artifacts, often called "ornamental", "decorative", "ceremonial", or "ritual", the evolutionary function of which the anthropological and archaeological literature has never successfully explained. We will study the common instances, and the kinds of artifacts of most general importance across human cultures and timespans, and the connections between them, rather than thrilling to the rare and freakish artistry beloved of collectors, museums, and ethnographers.

Sungir (in the Russian plain, c. 200 km east of Moscow): burial with mammoth ivory bracelets and thousands of mammoth ivory beads,

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25000-17000 BC. This is long before the Neolithic (early agriculture era; the people represented in these burials were mammoth hunters. http://archaeology.about.com/od/sterms/g/sungir.htm. Randall White estimates that an individual bead took one to two hours of work, and as a result that the grave goods in such a burial represented nearly 10,000 hours of labor. [7] "Each of the three intact individuals was lavishly decorated with thousands of painstakingly prepared ivory beads arranged in dozens of strands... The man was adorned with 2,936 beads…" http://www.donsmaps.com/sungaea.html

To describe my solution to these puzzles, in future posts I will elucidate updated versions of the theories laid out on the evolutionary functions of these objects[1]. These theories are not about how people in these cultures perceived or thought about their axes and shells and their uses, much less about the interpretations and explanations given in the accounts of travelers and missionaries, and in the ethnographic literature. These varied widely, both in how the natives themselves interpreted their thoughts and actions and how the various observers who recorded these thoughts and actions further interpreted them. Understanding the thoughts and feelings of people in such an alien culture is usually extremely difficult at best. Trying to get in the heads of people from long-extinct cultures is a futile exercise. Our account will rather be about the evolutionary function of these objects and their uses, which was typically unconscious, but which we can infer from archaeological facts, objective aspects of ethnographic observations, and general evolutionary and economic principles appropriately adapted. We talk in short in terms of *ultimate* rather than *proximate* explanations [14]: what were the consequences in terms of Darwinian fitness for the non-concrete uses of collectibles?

Artifacts as Wealth

There were a wide variety of objects that at one time or another could have served as to a greater or lesser extent as stores and displays of wealth, and to a greater or lesser extent media for the satisfaction of obligations and units of account. (I will describe what I mean by "media of obligation satisfaction" in future posts; for now it is sufficient to say that it is a generalization of the economic idea of "medium of exchange" to include a wide variety of non-exchange transactions that transfer wealth).

The manufacture and use of shell beads is more than 100,000 years old, and possibly dates to the earliest millennia of *homo sapiens*. The use of "ritual" blades and points may be even older, predating our species. The general pattern of artifacts in general and collectibles in particular in terms of their abilities to store, display, or transfer wealth can be diagrammed as follows:

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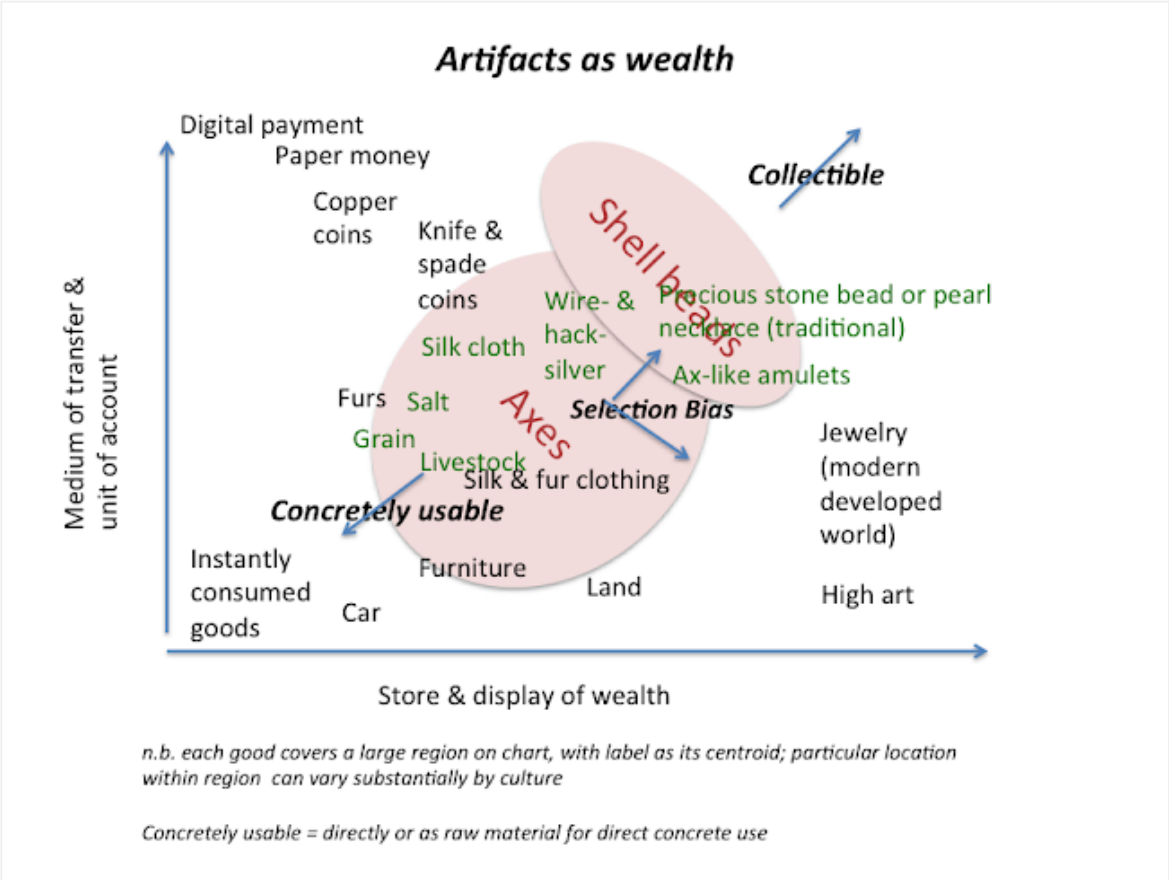


At the extreme upper left-hand corner is modern money – used purely as a medium of exchange and obligation satisfaction, and with high velocity, typically several transactions per month. The predominant such media in a culture also usually becomes its of account. At the opposite (southeast) extreme are pure stores of value – seldom if ever alienated, they usually change ownership only at death. At the northeast extreme are pure collectibles – a low-velocity (a few to a few dozen transfers per human lifetime) medium of obligation satisfaction and exchange, but also a store and display of wealth. At the southwest extremely are immediate consumables, such as food obtained from foraging in cultures that do not preserve or store their food.

"Media for the satisfaction of obligations" is a generalization of the idea from modern monetary theory that money serves as a media of exchange. The kinds of obligations that might be satisfied over the course of human evolution are far broader and deeper than just exchange, which was probably far from the most important kind of wealth transfer during the Paleolithic. "Unit of account" is any measure or count that people in a society used as a general (across multiples goods and services) proxy measure of value.

As for display of wealth, according to the theory of this series this was the main function of ornamentation, and is derivative from the function of these objects as stores of wealth. In a future post we will discuss more about what is meant by this

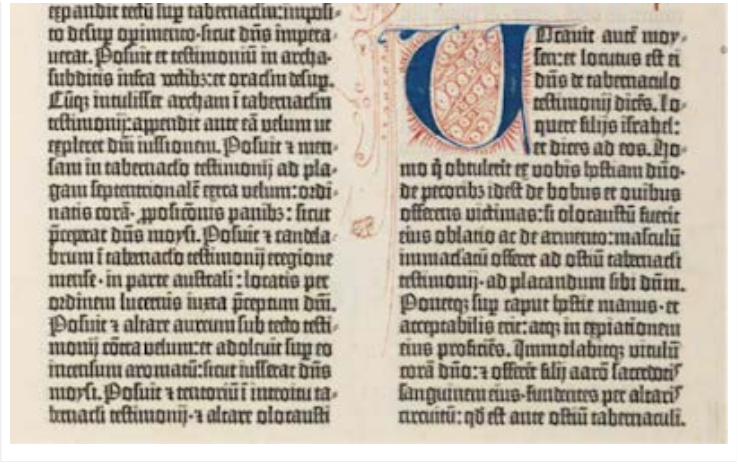
terminology.

The correlations between media for the satisfaction of obligations and units of account, and between stores and displays of wealth, largely holds true for Paleolithic and Neolithic times when functions were condensed that are now quite distinct . In more recent times there has been a strong divergence between stores of wealth and displays of wealth (e.g. stocks and bonds vs. jewelry).

Most of the durable artifacts that archaeologists dig up from the Paleolithic through Bronze Ages, including the early civilizations of Mesopotamia, lived a mixed life – they were concretely useful objects **and** low-velocity media of fitness-benefiting transactions **and** stores and displays of wealth, to varying degrees, but seldom if ever used as just any one of these. They *condensed* multiple functions that we now consider separate and often unrelated, as discussed further below.

It is important to keep in mind two very large selection biases at work in archaeology. The first is that apart from some exceptional environments (e.g. peat bogs) that preserve organic material, only durable objects survive to be dug up by the archaeologist. This means that an artifact is more likely to be a collectible than the typical artifact in the culture (which quite preponderantly would have been organic materials for concrete use that have not survived). The second selection bias is that nearly all collectors and museums, and most archaeologists, are heavily biased towards collecting objects that more resemble unique artworks than they are interested in collecting or studying repetitive and boring objects. Overcoming this bias can result in substantial breakthroughs in understanding a culture. For example Denise Schmidt-Besserant discovered the origins of writing in Mesopotamia by focusing on repetitive and unartful clay tokens that had been ignored by collectors and ther archaeologists.

In addition to the two general selection effects above, another selection effect particularly impacts metals. That is that metals, especially precious metals but even baser metals such as copper and bronze, were recycled very efficiently. Metallic artifacts we find in archaeological digs are likely to be particularly unrepresentative of the metallic artifacts most commonly used in a society. For money in particular, unless they were unique artworks of particular attraction to collectors, an earlier form of metallic money has with very high probability been recycled into a later form of metallic money, or into some other metal object, the result being that the earlier forms are highly underrepresented in the archaeological record.



From the Gutenberg 42-line Bible [source].

Some Basic Patterns of Collectibles

Three of the most important patterns of collectibles that have been discovered in this research are *condensation*, *authority resemblance*, and *unforgeable costliness.* In the former two cases these patterns are broadly applicable to artifacts in general. Taking these in turn:

1. Condensation -- generally speaking, the farther back we go in time, the lesser the degree of specialization (division of labor) and thus differentiation of technology exists. Furthermore, the weight and bulk of artifacts per family was much lower in Neolithic society, with its much higher transport costs, than today. In Paleolithic forager societies, which were typically mobile, belongings had to be carried on the person, resulting in a still radically lower weight or volume of goods controlled by a person or clan. This results as we go back in time in *condensation:* a given object tends to serve a greater variety of functions: it *condenses* the functions we consider or take for granted today as separate and often unrelated functions.

Obtaining fitness benefits by the widest variety of available means within a society with a radically smaller division of labor and differentiation of technology. Thus institutions usually condensed the functions of religion with business, business with politics and war, law with lore, tort law with criminal law, ceremony with accounting, and gang warfare with a substantial body of customary rules. Objects could condense the functions of jewelry with coinage, and concrete utility with media of obligation satisfaction and store of value.

From our point of view functions in earlier periods are increasingly condensed, and in Neolithic times were very highly condensed, and in Paleolithic times were radically condensed: a typical object tended to serve many more purposes in the early Paleolithic than in the late Paleolithic, less still in the Neolithic, and less still after the dawn of state-like agricultural societies. Contrariwise the general trend of economic development over millennia, and between stages of the Paleolithic and Neolithic, is *differentiation.* Missionaries, travellers, and ethnographic observers, as well as their readers, often

committed the *fallacy of exclusion* – concluding that because an object was used for one thing, that it was not used for another thing in what we consider to be a separate sphere of activity.

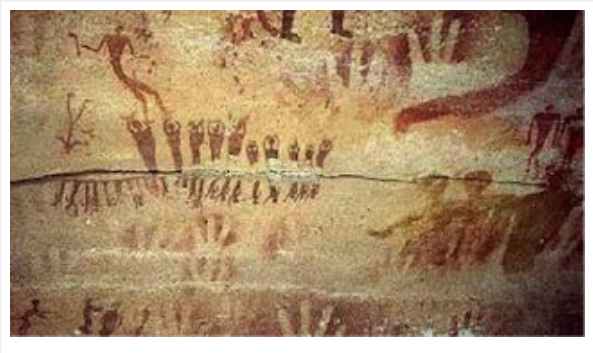
Detail from the Giant Bible of Mainz, *handwritten in the traditional way around the same time as Gutenberg produced the first printed Bible.* [source]

2. Authority resemblance – Initial forms of innovative artifacts, of a kind the value of which was based at least in part on their authority, often borrowed authority from what they were replacing by physical resemblance. Mimicry of or semblance to pre-existing authoritative forms in a new medium was and is a very common feature of innovations: examples range from Gutenberg's printing press mimicking scribal script to the private overnight parcel service Federal Express alluding by name and color scheme to the United States Postal Service. The ritualistic airstrips, offices, military drills, etc. of cargo cults were an extreme example of authority resemblance, and it predominates in the design of national flags and many other symbols (such as commercial brands) that invoke reputation or authority. Where not tabooed or banned as counterfeiting or trademark violation, authority resemblance was and is a common feature of innovative collectibles, their form invoking a traditional authoratative form while pioneering a new media.

The histories of art and architecture in religion, politics, finance, and business are replete with examples of authority resemblance. The designs of many of the very earliest coins, which differ greatly from the standard and presumably optimal form they soon converged on and have retained ever since, highlights what existing objects they were inspired by and suggests a similarity in intended role and function between the novel object and the old object whose form it has taken on. We will see in this and future posts that the earliest coins borrowed their form from shells, beads, and the metal blades of tools.

Detail of necklace from a burial at Sungir, Russia, 28,000 BP. Interlocking and interchangeable beads. Each mammoth ivory bead may have required one to two hours of labor to manufacture. [9]

3. *Unforgeable costliness* – a wide variety of objects, which we call *collectibles*, have as a necessary component and a secure costliness – either in search costs of collection, in manufacturing costs, or both – that serves to constraint its supply curve. This is true for collectibles as media of obligation satisfaction as well as collectibles as stores and displays of wealth.



Efficient symbolic communication – Mesolithic cave painting -- abundant surface and easily made pigments. Much information. [Source]

Many of the artifacts called here collectibles, especially Paleolithic and Neolithic beads, have been assumed by archaeologists to be primarily "ornamental" and serve a "symbolic" function, i.e. are said to have been "information technology"[6]. If an artifact were purely symbolic (e.g. a clay tablet impressed with accounting records) we would expect symbol efficiency to be high given the available materials (e.g. clay) and technologies (e.g. symbols for words). But with collectibles, people went out of their way to choose costly goods and undertake costly methods of manufacture – collectibles such as beads typically had an extremely poor symbol efficiency compared to the available alternatives. They must have had functions that were much more than symbolic, leading to competing requirements that we must elucidate.

Efficient symbolic communication – already existing and otherwise useful flint painted with symbols (c. 5000 BC) [Source]

As we will see below, beads of shell, bone, and similar objects were made, strung, and worn for tens of millennia in the vast majority of Upper Paleolithic and Neolithic cultures. Gratuitous use of costly beads over tens of millennia would have been weeded out by Darwinian genetic selection. Beads, used as actually observed either in Epipaleolithic or Neolithic burials or as observed in the few recently observed such cultures, are not, in contrast to spoken human language and every other information-rich symbolic system, used in any way remotely approaching the efficient coding scheme that would have emerged from natural selection if pure symbolism were their main evolutionary function. Beads that are arranged in a pleasing regular pattern, as they typically are, carry very little information – they are extremely inefficient in terms of information per unit of weight or volume and especially per cost of collection and manufacture. Since forager bands were typically mobile they had even more compelling evolutionary pressure to improve the symbol efficiency of their media, by evolving choices and designs for the most efficient available such media, if such recorded communication was an evolutionary important (and evolutionarily accessible) problem. Instead, vocal communications were far more useful for mobile forager bands and underwent the radical and unique evolution of human spoken language, while remains of recorded symbolic communications are sparse and rare.

Efficient communication – painted pebbles (Norwegian Mesolithic, c. 11,000 BP)

Not only were beads of multiple varieties almost always strung together in regular patterns that did not take advantage of the coding capabilities of the multiple varieties, but the most common bead pattern was repeating the same kind of bead over and over again, which carries no information whatsoever in the arrangement of the beads. The digital nature of shell beads makes this a tempting theory in our society so saturated by computer screens and codes, but it is wrong.

Cost-effective communication – pictures, pictograms and counting symbols in abundant clay (Transylvania, 5500-5300 BC)

What would have efficient symbolic coding of bead patterns look like if contrary to the observed facts it had evolved? If there are, for example, 16 different roles (what we would call “offices”) in a clan (elder, shaman, etc.), and there is evolutionary benefit (e.g. in minimizing disputes) to representing title to those positions in permanent form, one does not need a long string of beads. A clan only needs 16 different objects, each representing a different office. If the clan has only

2 different kinds of objects available, they still only 4 of them (2^4 = 16 bits of information). There are a wide variety of coding schemes in between that would be this efficient or nearly so. But no such efficient scheme, or any scheme anywhere nearly as efficient as such a scheme, using beads has ever been observed in widespread use in a Paleolithic or Neolithic culture: neither in contemporarily observed instances of such cultures nor in the archaeological record.

Wasteful as symbolic communication – regular pattern (little information) and made of costly beads, as well as taking much additional labor to assemble from the beads. Wampum, Museum of Ontario Archaeology. [Source]

If Paleolithic and Neolithic beads had been as extremely cheap as mass-manufactured beads are today, and transportation and storage costs had been those of today, the extremely poor symbolic efficiency of how beads were used might be taken to not have mattered so much. But beads were very costly to make and in a mobile forager society were costly to bring with. An example of how beads were far too costly for purely symbolic communications is provided by the cost analysis done on beads found in the Sungir Burials of the 29,000-15,000 BP epoch. Randall White estimates that an individual bead took one to two hours of work, and as a result that the grave goods in such a burial represented nearly 10,000 hours of labor. [7]

QR codes are a great way for computers to read a label printed by another computer and affixed to a movable object, but a terrible technique for human-to-human communications, especially if as with shell beads each "pixel" had cost an hour or more of human labor to make.

So while beads could have been and sometimes were used for symbolic purposes, this could not have been their primary evolutionary function – symbolic aspects of their use would have been very secondary. A similar analysis applies to most other kinds of collectibles, such as "ceremonial" blades and points (most commonly axes). Unforgeable costliness – the secure supply curve of these objects relative to the much more common objects in the environment that were not used as collectibles – strongly suggests that these collectibles had some function very important to Darwinian fitness related to wealth. What that function was has been explored in [1] which I hope to elaborate on in future post(s).

Regular pattern of costly beads. Wampum, British Museum. [Source]

In some broad sense of the term any display of wealth is "symbolic", especially when its design invokes the reputation or authority of prior displays of wealth. Thus the commonality of authority resemblance in the design of paper money, coins, and jewelry, repeated tropes such as gold foil and expensive ultramarine blue pigments in medieval and Renaissance European art, etc. But it is the ability of the medium to serve as a secure store and display of wealth that is doing the heavy lifting here, not its ability to efficiently convey information.

When costliness becomes insecure, and authority resemblance comes to predominate over genuine scarcity, we can get counterfeiting crises that disrupt the culture relying on the old form of collectible. The first craftsmen to pound copper and gold flat and apply it to surfaces could make far more surface look lavish than was possible with solid copper or gold. Such a counterfeiting crisis would have produced a kind of inflation broader than monetary inflation: a change in expectations about wealth securely displayed as well as wealth securely stored in an object. To the extent imitation cowrie shells (see below) could be made out of materials much cheaper than the genuine cowrie (e.g. stone) it could produce such inflation. Trade beads were colonial examples: mass-produced beads that were supernormal models of shell beads shiny from wear, usurping their authority, while being cheaply mass produced, undermining the previously unforgeable costliness of beads.

Attributes of Collectibles

What attributes are we looking for in media of obligation satisfaction, units of account, and in stores and displays of wealth? "Shelling Out: The Origins of Money" argued, and future posts will argue, that

[C]ollectibles provided a fundamental improvement to the workings of reciprocal altruism, allowing humans to cooperate in ways unavailable to other species. For them, reciprocal altruism is severely limited by unreliable memory. Some other species have large brains, build their own homes, or make and use tools. No other species has produced such an improvement to the workings of reciprocal altruism.

[Economist Karl] Menger called this first money an "intermediate commodity" -- what this paper calls collectibles. An artifact useful for other things, such as cutting, could also be used as a collectible. However, once institutions involving wealth transfer became valuable, collectibles would be manufactured just for their collectible properties. What are these properties? For a particular commodity to be chosen as a valuable collectible, it would have had, relative to products less valuable as collectibles, at least the following desirable qualities:

```
(1) More secure from accidental loss and theft.  For most of history this
     meant it could be carried on the person and easy to hide.

(2) Harder to forge its value.  An important subset of these are products
     that are unforgeably costly, and therefore considered valuable…

(3) This value was more accurately approximated by simple observations or
     measurements. These observations would have had more reliable integrity
     yet have been less expensive.
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Humans across the world are strongly motivated to collect items that better satisfy these properties. Some of this motivation probably includes genetically evolved instincts. Such objects are collected for the sheer pleasure of collecting them (not for any particularly good explicit and proximate reasons), and such pleasure is nearly universal across human cultures. One of the immediate proximate motivations is decoration. According to Dr. Mary C. Stiner, an archaeologist at the University of Arizona, "Ornamentation is universal among all modern human foragers." [W02] For an evolutionary psychologist, such a behavior that has a good ultimate explanation, in terms of natural selection, but has no proximate rationale other than pleasure, is a prime candidate to be a genetically evolved pleasure that motivates the behavior. Such is, if the reasoning in this essay is correct, the human instinct to collect rare items, art, and especially jewelry.

"Miniature Bi disc", jade, from the late Neolithic to Bronze Ages, c. 3000-2000 BCE, diameter 1.25" to 2" [Source]

The kind of mobile art made by Paleolithic humans, (small figurines and the like) also matches these characteristics well. Indeed, Paleolithic peoples made very few objects that were not either utilitarian, or shared characteristics (1)-(3). There are many puzzling instances of useless or at least unused flints with *homo sapiens*…Cunliffe [C94] discusses a European Mesolithic era find of hundreds of flints, carefully crafted, but which micrograph analysis reveals were never used for cutting.

Flints were quite likely the first collectibles, preceding special-purpose collectibles like jewelry. Indeed, the first flint collectibles would have been made for their cutting utility. Their added value as a medium of wealth transfer was a fortuitous side effect that enabled the institutions described in this article to blossom. These institutions, in turn, would have motivated the manufacture of special-purpose collectibles, at first flints that need have no actual use as cutting tools, then the wide variety of other kinds of collectibles that were developed by *homo sapiens*.

It is no coincidence that the attributes of collectibles are shared with precious metals, coins, and the reserve commodities that have backed most non-fiat currencies. Money proper implemented these properties a purer form than the collectibles used during almost all of human prehistory.

Grave goods from Longshan or Liangzhu cultures (China, 3000 to 2000 BCE) [Source]

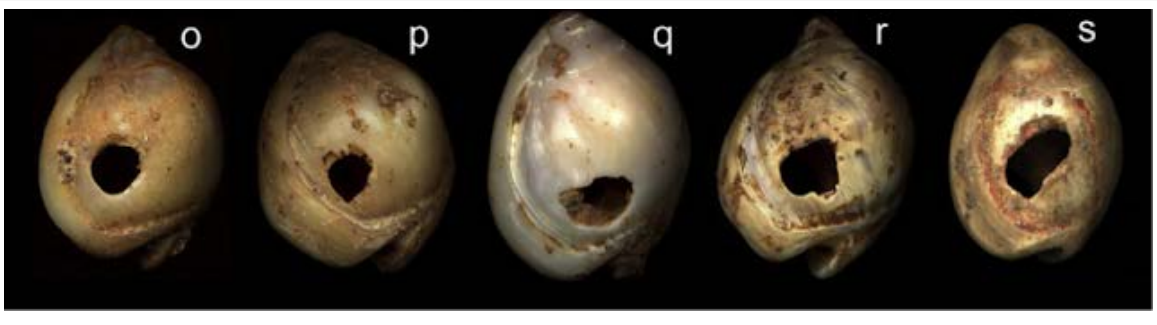
Due to endemic violence, high transaction costs, and the extremely low division of labor compared to later economies, there was nothing resembling modern efficient spot markets in Paleolithic or most Neolithic societies. As a result, classical accounts of the origins of money like those of Smith, Menger, et. al. cannot be used as a theory or guide to the actual historical origins of money without extremely heavy modification.

Rare and lovingly worked shell collectibles being displayed for transfer at a bride price ceremony in Papua New Guinea (20th century) [Source]

The Snail Standard

Collectibles, even pure collectibles, have an extremely ancient heritage that must have put them under prolonged evolutionary selection: cultural (memetic[2]) selection most obviously, but as we shall see, possibly also genetic selection for a hankering to collect certain kinds of objects for display and accumulation, not just for food. An evolutionarily gratuitous practice of such substantial cost would have soon died out, but collectibles with the traits listed above have been a nearly ubiquitous and important part of human cultures for many tens of millennia and in all parts of the planet to which humans have spread.

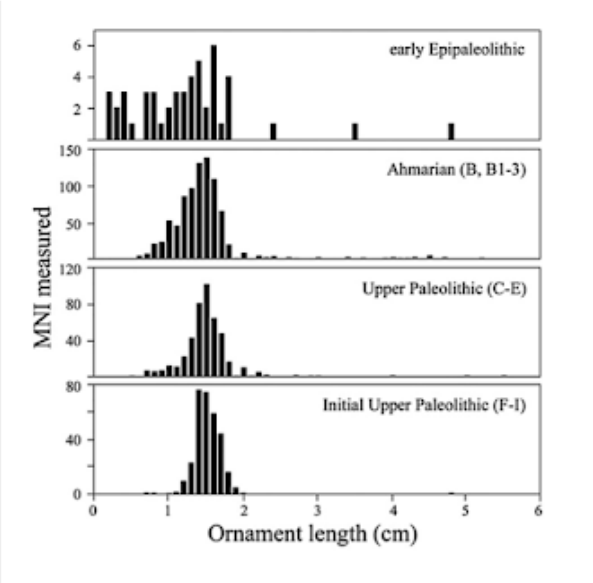
The Upper Paleolithic period, as the tail end of the most recent Ice Age, featured climates mostly cooler than today and sea levels that were many tens of meters lower than they are today. The vast majority of seaside communities of that epoch now lie submerged under fathoms of ocean and are usually prohibitively costly for archaeologists to try to find.



Consistent form: Nassarius gibbosulus *shells beads in varied stages of use-wear, from Üçağızli Cave I in Turkey. Shell beads generally get shinier with wear. [6]*

One exception to this submersion is the set of Üçağızli caves along the thin stretch of Turkish coast that sits in front of Syria. The approach to the coast there is quite steep. As a result, even though the caves are still above sea level today, and were thus 60-80 meters above sea level in the Upper Paleolithic, they lie a short (but steep) walk of probably around 1 kilometer from that era's shoreline.

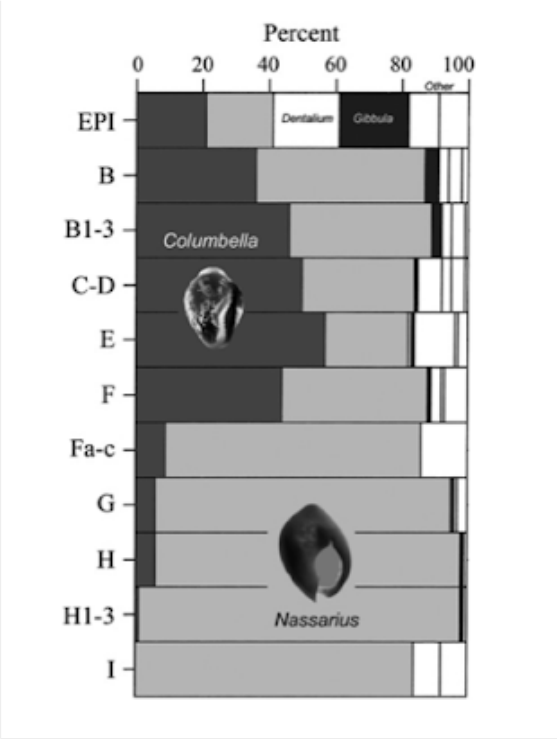
The inhabitants of these caves lived in a climate that was more like that of today's Baltic Sea region than of today's Mediterranean. They feasted both on land animals such as deer and on marine resources, a mix that trended from land resources to a mix of land and marine resources over the period recorded in the archaeological layers. These people walked the shore not just in search of food, but also in search of a very specific set of uncommon yet authoritative objects – shells of the sea snail *Nassarius gibbosulus.* Once collected they were selected for size and intactness, and laboriously perforated. They were then strung onto cords, presumably as necklaces, bracelets, or belts, or sewn onto clothes, as beads would appear in later Paleolithic burials. Extensive cord-wear exists on most of the beads.



Consistent size distributions of Üçağızli Cave I beads by culture period from 41,000 BP (start of Initial Upper Paleolithic) to 29,000 BP (end of Epipaleolithic) [6]

Upper Paleolithic shell bead manufacturers were very selective of which size and shape of shells they chose to turn into beads: the resulting beads had "great consistency…of size and shape" compared to the natural biotic distribution of the shells. Most variation in shell species, shape, and size was eliminated during manufacture. They were as similar in size, shape, and weight as it was possible for a collectable set of natural objects in that environment to be. According to Stiner et. al.:

> Something about the basket-shaped forms in particular – their resemblance to something else or just their geometry – held the interests of people over very long stretches of time. It is difficult to argue that continuity in species and forms across such vast stretches of time and space reflects cultural affinity or continuity, particularly in the case of beautiful *natural* objects. While preferred shell forms stayed much the same, other aspects of culture varied a great deal.[6]



Severe conservatism of shells selected for use as beads at Üçağızli from c. 41,000 BP (layer I) to 29,000 BP (layer EPI) – time goes from bottom to top. Relative frequencies of Columbella, Nassarius, Dentalium, Gibbula, and other taxa used as shell beads. There was during this long period a very strong preference for the "basket-shaped" shells of the most typical size of Columbella and Nassarius over the many other and more common shapes and sizes of shells across the Mediterranean. [6]

Besides a consistent form, the beads were also manufactured in a supply that was very stable across the more than ten millennia recorded in the Üçağızli caves. The diet changed – at the beginning of this timespan consisting almost entirely of land resources, at the end in a mix of land and marine resources -- but the shell bead supply remained remarkably steady.

Consider that objects constituting an efficient medium for the satisfaction of obligations among forager peoples would satisfy two main criteria:

> 1. They must be common and consistent enough to find or make a sufficient number of fungible instances to allow divisibility, and
>
> 2. They must be rare enough or costly enough to make to constitute substantial wealth with low bulk and weight, and must fit snugly enough together when strung and worn, that they do not overburden the mobile forgers who carry them around when changing campsites (as they often did).

These hard-to-find shells of *Nassarius* and *Columbella* were the objects in the Mediterranean forager environments that best satisfied these criteria. Incorporating as they did unforgeable costliness, they would have also made splendid stores and displays of wealth. In any of these roles, they were a pure collectible. The snail shell standard was far from arbitrary.

Layer	Vertebrate NISP	Standardized ornament abundance	Standardized shellfish abundance	Standardized land snail abundance
EPI	519	0.08	0.17	0.14
B	3129	0.08	0.19	0.02
B1–3	9633	0.05	0.11	0.01
C–D	2398	0.04	0.04	0.04
E	936	0.05	<	0.01
F–Fc	3822	0.05	<	<
G–H	1813	0.05	<	0
H1–H3	3581	0.04	<	0
I	427	0.03	0.03	0.01

Consistent supply: abundance of beads ("ornaments") vs. vertebrates (typically edible land animals) and edible shellfish ("shellfish") found in the successive Üçağızli layers 41,000-29,000 BP.[6]

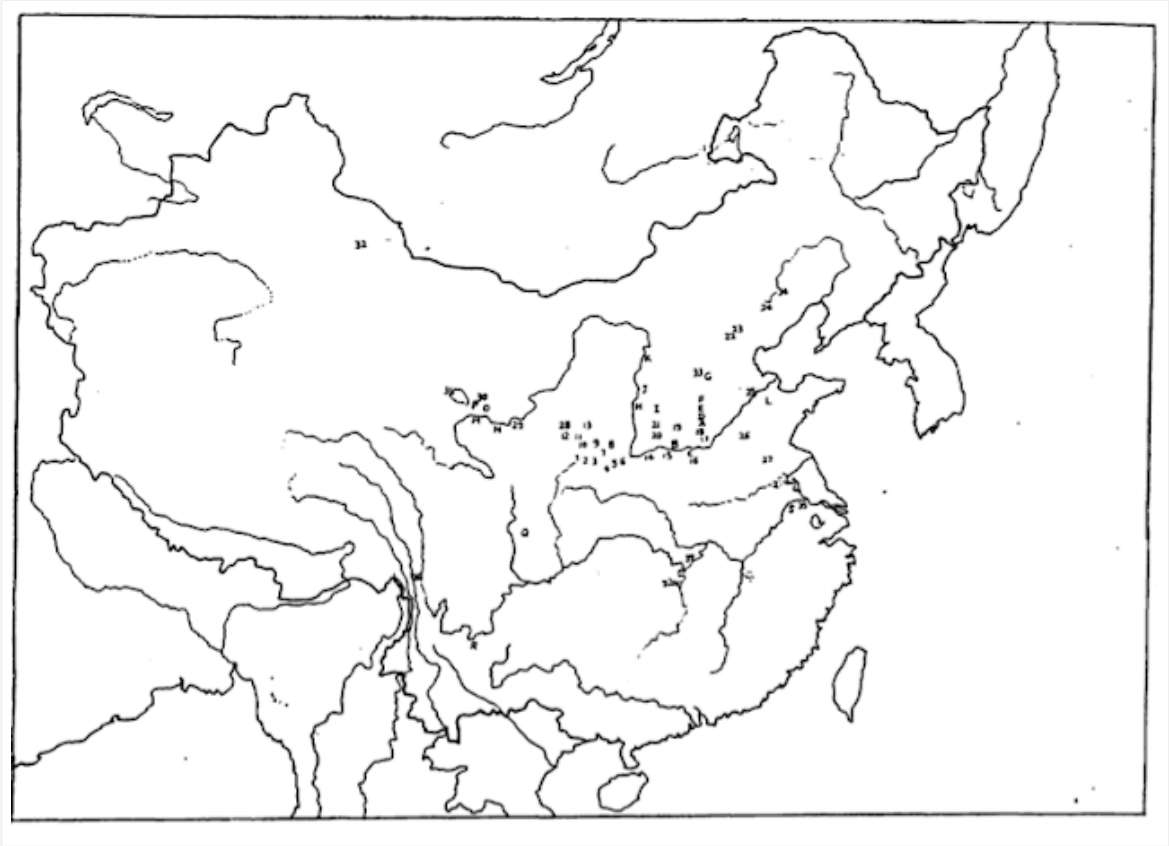
The use of *N. gibbosulus* shells as beads goes back much further in time than the 41,000 BP starting point of this study of Üçağızli. The earliest evidence of this shell standard is dated from between 100,000 and 135,000 BP at Skuhl in Israel, and similarly old beads were found in Algeria. The institution prevailed for many tens of thousands of years across most of the length of the Mediterranean[11]. It was not until the Epipaleolithic that there was even the slightest trace of Schumpeterian "creative destruction" in this institution.

"Money Cowry; Length 2.6 cm; Palou Tello, Batu Islands, Indonesia." [Source]

Cowries

Cowry shells are among the most widely distributed objects found in Eurasian Neolithic archaeology[8]. Peng and Zhu [2] use the archaeological record to trace an early Bronze Age "Cowrie Road" roughly following the arc of the later Silk Road across the mid-Eurasian steppes from the Red Sea (where the species used probably lived) to what is now modern China.

The lack of thick forests or fixed agriculture made the region relatively easy for merchants and other travellers to traverse.



Finds of cowries originating from the Red Sea (off the map to the left), during the middle and late Shang Dynasty, c. 1400-1040 BC. This general West-to-East movement would be repeated in much later times by a largely ship-borne movement of silver. [2]

These cowries have also been found in many Neolithic excavations within a few hundred kilometers of the Red Sea, including pre-dynastic Egypt and Jericho as far back as the second Neolithic stage (7000-6000BC). Cowries are also found in the steppe Djeitun culture (7000-6000 BC). Cowrie shells did not however reach everywhere, and were far from the only shells used in the Eurasian Neolithic. In southeastern China during the late Neolithic and early Bronze Age, cowries were not used, but instead four species of mollusk from China's own coast[2]. In the Mediterranean Neolithic *Spondylus* shells were often used [3], but there was also a significant presence of cowrie in Mesopotamia and the eastern Mediterranean.

Authority resemblance: bronze cowries (Shang dynasty ( ) 1600-1046 BC) [Source]

"Ant-nose" coins (Eastern Zhou 770 to 221 BC) [Source]

Cowries are also recorded in historical times as being used as money, for example in parts of China. The cowrie shell symbol is used as a component to write several Chinese words [5] associated with the transfer of value, including

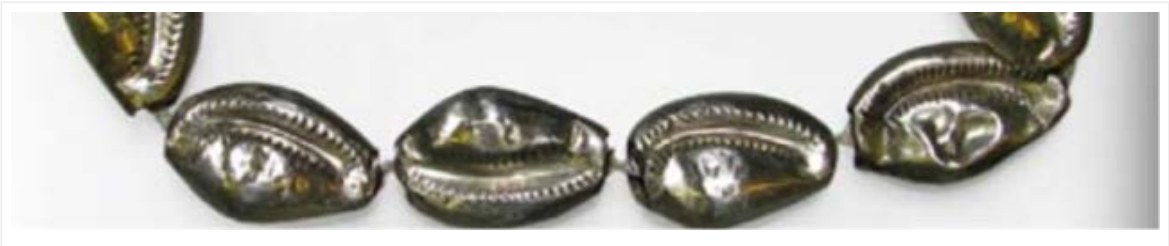
(rule, law, regulation) – a cowrie and a knife – possibly referring to the two main kinds of legal remedies (money and punishment), which I hope to explore in depth in future posts

(buy, purchase) – a net over a cowrie (cowrie in a pouch?)

Exchange rates between cowries and coins existed in at least India, Bengal, and Siam.

Obverse and reverse of a Ban Liang coin from the Western Han Dynasty (206 BC – 204 AD). Like beads, they were strung on strings. These "strings of cash" were the most common form of payment in China until colonial times. [Source]

Authority resemblance, the mimicry of pre-existing authoritative forms in a new medium, is as described above a very common feature of innovation. The earliest electrum coins invented near the Turkish coast appear, like the Chinese bronze cowries and " ant-nose" coins (so named by a much later numismatist), to purposefully resemble pre-existing shell collectibles[13]. This suggests that the earliest coins were intended to be authoritative for uses similar to what cowries in China and electrum beads in Anatolia, respectively, were already being used for.



Electrum beads in the form of cowrie shells, from a burial in Middle Kingdom Egypt. Yet another likely case of authority resemblance. [Source]

Shininess and other aesthetically desired characteristics could have served as *proxy measures* of scarcity during the long periods of the shell standards in the Upper Paleolithic, and these continue to be attractive attributes of jewelry to this day.

Electrum and gold beads, Nubia, c. 1700-1550 BC

Conclusion

It was once argued that the eye could not have evolved, for what use is half an eye, much less a quarter of an eye and so forth? Richard Dawkins called this "argument from lack of imagination." It is hard to imagine objects much less functional than those we are

familiar with as being useful at all. But even one light-sensing cell can be useful in telling the difference between night and day, which in some environments can be strongly correlated with the availability of food or protection from predators. Starting from that most rudimentary (yet useful in itself) of functions, there are a wide variety of useful steps to the sophisticated eyes of animals today. [4] Similarly with the artifacts of archaeology, sometimes objects far less functional than the ones we take for granted could have been evolutionarily crucial to humans dating back at least to the Middle Paleolithic.

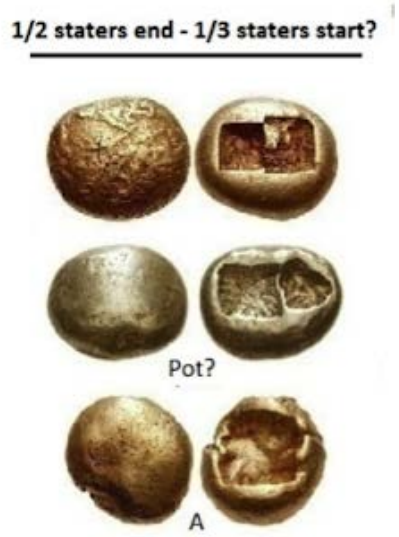
Electrum bead, Mesopotamia c. 1000 BC. [Source]

A wide variety of artifacts have served to store, display, and transfer wealth in a wide variety of ways, ranging from unique artworks and heirlooms as we now understand them, to money as we now understand it (typically official government currencies, the modern legal definition of money), to a wide variety of forms and uses in between, most of which we no longer know about or have a difficult time understanding. Where artifacts are present in burials, they are most commonly these artifacts of wealth – these collectibles -- rather than concretely useful tools. They are also common in the remainder of the archaeological record dating back many tens of millennia, strongly suggesting an important evolutionary function. During Upper Paleolithic times shell beads were manufactured in standard forms with a tradition so rigid that these forms existed largely unchanged for many thousands of years.

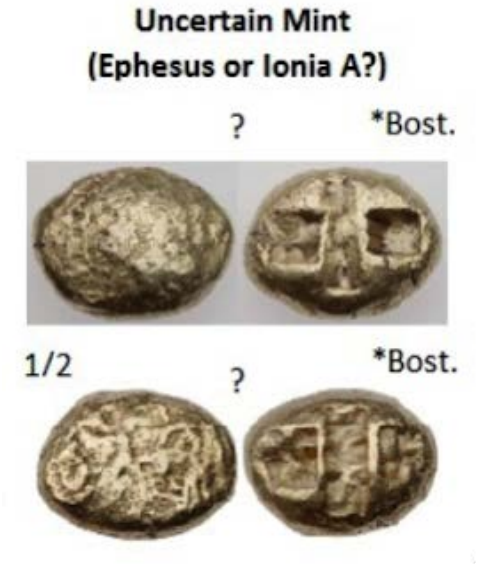
Electrum bead necklace, Lydia (in what is now Turkey), c. 550-450 BC

Stocks and bonds, futures and derivatives, the kind of money we are familiar with (coins, paper money, digital money, etc.), high art, and most other artifacts of wealth as we understand them did not exist in Paleolithic times, and even in Neolithic times, when some artifacts more closely approached these ideals, they were still far less developed and specialized than today. We are not talking about the highly evolved forms of collectibles, quite the opposite – we are talking about the most rudimentary of function, which

nevertheless is quite a bit better than nothing (which is what other animals have when it comes to collectibles). I described what such function is here and will be elaborating these theories and demonstrating them further in future publications.



Early electrum coins of the "Ionian-A" or Ephesian type, in what is now Turkey, c. 625-575 BC. [Source]



Early electrum coins of the "Ionian-A" or Ephesian type, in what is now Turkey, c. 625-575 BC. [Source]

Of the wide variety of artifacts that had no concrete use, but which archaeologists tend to dub "ornamental" or "ceremonial", most types were idiosyncratic to particular cultures. But two types were widely spread in time and space: beads of shell or bone were ubiquitous in Paleolithic and Neolithic cultures, while "ornamental" blades and points were widely popular in the Neolithic and possibly much further back in time.

In both cases where coins were invented – along the coast of Turkey and in parts of China – many early coins resembled shell beads in probable cases of authority resemblance. Prior to the invention of coinage many metal beads had also been shaped in forms resembling shell beads. Before the widespread use of coinage, the artifacts we now see as jewelry likely also often condensed a function similar to early coinage.

Early electrum coins of the "Ionian-B" or Milesian type. in what is now Turkey, c. 625-575 BC [Source]

Early electrum coins of the "Ionian-B" or Milesian type. in what is now Turkey, c. 625-575 BC [Source]

Beads of shell and bone dominate the artifacts that look to us like ornaments in the archaeological record from its invention in the early years of *homo sapiens* to late Neolithic times, and were still very influential when coins were invented.

Contrary to a currently popular archaeological theory, the main use of these shell beads was not as “information technology” or the visual convenience of symbolic information via different combinations of shell beads. Other materials available in forager environments and other techniques foragers could use were much better suited to cost-efficient symbolic communications. Instead what coins and jewelry, at least as far back as the very conservative shell bead traditions of the Upper Paleolithic, have in common, in sharp contrast to cost-efficient symbolic systems, is unforgeable costliness, which securely constrained the supply curve of these goods. This economic security feature strongly suggests functions related to wealth and the fitness benefits of wealth. What these functions more specifically were, in terms of genetic evolution and certain models from economics applied to that evolutionary framework, will be the subject of subsequent post(s) in this series.

Acknowledgements

My thanks to Colin Hardwick and Elaine Ou, among others, for their help with research and/or editing.

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Posted by Nick Szabo at 12:04 AM

10 comments:

Anonymous said…

The 'origin of money' and the economy is organized violence (the invention of male gods/state/war lords), when anarchy (self-sufficiency) had been replaced by patriarchy (tribute to the church and state). That tribute enforced surplus production (growth). Self-sufficient communities don't grow rampant. There is still zero growth of production and zero growth of wealth transfer among the self-sufficient communities in the rain forest.

http://www.miprox.de/Wirtschaft_allgemein/Martin-Symp.pdf
http://www.gerhardbott.de/das-buch/summary-in-english.html

9:53 AM

Donald McIntyre said…

IMHO, the concepts introduced here about basic patterns of collectibles and money (condensation, authority resemblance, and unforgeable costliness) and the use cases of wealth in our evolution (stores and displays of wealth vs medium of transfer and unit of account) should be used to re-think the meaning of the archaeological record, therefore our conception of human evolution,maybe re-center it around economics rather than religion and abstractions (although those may have been the direct purpose, the underlying "unconscious" purpose could be about trade and wealth).

Q: Could tombs and ornaments in burials (if they were well hidden or highly protected like some pyramids and European burial sites) serve as vaults to use wealth for further generations rather than "for the afterlife"?

9:54 PM

nick said…

Thanks Donald. Possibly burials could have sometimes been "sacred hoards" usable by e.g. only family members in dire straits. Difficulty and sacred taboo against digging up would protect this "insurance policy" against momentary whims (by which family wealth in more accessible modes often gets frittered away). Interesting idea!

Anonymous, coordinated violence long preceded the dawn of the state, it has existed since before the dawn of our species. It did indeed play a role in the origins of media for the satisfaction of obligations, as I will relate in a future post and at https://szabo.best.vwh.net/shell.html.

1:52 PM

Anonymous said…

"coordinated violence long preceded the dawn of the state, it has existed since before the dawn of our species".

No. It began with the invention of male gods, when anarchy slowly but steadily had been replaced with patriarchy (organized violence).

http://www.gerhardbott.de/das-buch/summary-in-english.html

1:17 PM

Anonymous said…

Paleolitic cave paintings does not show warfare, violence and hierarchy, while post-paleolitic art is full of it.

1:34 PM

nick said…

"As for the Mesolithic, images of figures apparently pierced by spears are shown from cave and rock art in Italy and France, painted over 20,000 years ago. Mesolithic remains of humans apparently killed by spears and arrows are cited from many sites, including in Roumania, France, Algeria, Denmark, Sweden, Russia, Ukraine and India. An especially detailed description is provided of what appears to have been a massacre by spears with stone points of 59 people all ages and sexes at "site 117" near Djebel Sahaba in the Sudan along the Nile River some 12,000 years ago." -- http://www.culture-of-peace.info/books/history/pre-neolithic.html
See also http://mrgadfly.com/changing-minds-how-my-views-on-paleolithic-violence-evolved/
and many many other references.

3:10 PM

Anonymous said…

Yes, post-paleolitic. From anarchy into patriarchy. That was the time when the tragedy began and the homo sapiens evolved into a new species: the homo oeconomicus (collectivist).

4:18 AM

Anonymous said…

You did not mention bitcoin, decentralized form of money. Why?

3:03 PM

Matthew Light said…

We know that chimpanzee bands engage in organized violence. Is it because of their patriarchal gods as well?

8:25 AM

Anonymous said…

What happened to Pierre Bourdieu's "Theory of Distinction"? It's a great theoretical framework for analyzing collectibles, IMHO better than evolutionary advantage.

4:09 AM

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